

## LEED Credits Guide to Eaton Products and Services

Solutions Focus

New Construction and  
Major Renovations  
LEED-NC v2.2

A **bigger impact**  
on the marketplace,  
a **smaller footprint**  
on the world.

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PowerChain™ Management helps enterprises achieve a competitive and sustainable advantage through proactive management of the power system as a strategic, integrated asset throughout its life cycle. With Eaton's distribution, generation and power quality equipment; full-scale engineering services; and information management systems, the power system is positioned to deliver powerful results: greater reliability, operating cost efficiencies, effective use of capital, enhanced safety, and risk mitigation. That's the value of PowerChain Management.





# The Power to make a Difference

**Environmental stewardship, innovation and leadership are becoming increasingly important as we take steps to create a sustainable environment for future generations by going green. This is particularly important when it comes to construction of new buildings or major renovations of older ones. To this end, Eaton Corporation offers a broad range of energy-efficient and environmentally-friendly electrical solutions that can help a building go green and qualify for Leadership in Energy and Environmental Design (LEED) credits through the U.S. Green Buildings Council (USGBC®).**

The LEED Green Building Rating System™ is the “nationally accepted benchmark for the design, construction, and operation of high performance green buildings. LEED gives building owners and operators the tools they need to have an immediate and measurable impact on their buildings’ performance. LEED promotes a whole-building approach to sustainability by recognizing performance in five key areas of human and environmental health: sustainable site development, water savings, energy efficiency, materials selection, and indoor environmental quality.”\*

This document provides architects, specifying engineers, designers, building owners and others an overview of Eaton products that collectively have the potential to contribute up to 27 of the 69 total credit points towards LEED certification. The information contained in this document aligns with the Green Building Rating System for New Construction and Major Renovations (LEED-NC) Version 2.2 project checklist.\*\*

\*USGBC web site.

\*\*The water savings category is not applicable to Eaton solutions and is therefore not addressed within this document.

## Inside the green building

Eaton can help your building go green and qualify for LEED® credits through the USGBC

Tour this green building at [www.eaton.com/greenbuildings](http://www.eaton.com/greenbuildings)





## Save energy

- 1 Pow-R-Command™ Lighting Controls**  
Automatically turn off the lights when a space is empty; reduce artificial lighting requirements; energy savings of 10 to 30%
- 2 Uninterruptible Power Systems (UPS)**  
50% less power loss compared to traditional UPS
- 3 Variable Frequency Drives**  
Lower the demands on a motor, extending life; energy savings of 10 to 50%
- 4 ENERGY STAR® and Harmonic Mitigating Transformers**  
Fewer harmonics means more efficient energy consumption overall
- 5 Power Xpert® Software and Meters**  
Monitor energy consumption; identify energy savings opportunities and power quality issues
- 6 Energy Audits**  
Eaton engineers identify solutions to increase energy efficiencies
- 7 Power Factor Correction Capacitors and Filters**  
Decrease energy consumption and improve power quality
- 8 Paralleling Switchgear**  
Manage critical transition from utility power to on-site power sources; make practical use of alternative energy systems
- 9 Automatic Transfer Switches**  
Transfer essential loads and electrical distribution systems from utility power to green alternative energy sources

## Protect the environment

- 10 Integrated Facilities Systems™ (IFS)**  
Switchboard structure reduces material for power systems; reduces required floor space by 40%
- 11 Medium Voltage Switchgear**  
Environmentally friendly insulation, avoids SF6 gas—an extremely harmful greenhouse gas
- 12 Refurbishing Services**  
Extend useful life of existing equipment, preserve natural resources
- 13 Circuit Breakers**  
Less watts loss than fuses; can be reset, while fuses are typically discarded after they fail
- 14 Integrated Power Assemblies**  
Prefabricated, modular designs reduce packaging waste, save space
- 15 Busway**  
Use less copper and steel compare to cable and conduit; waste less material because busway is built to exact length

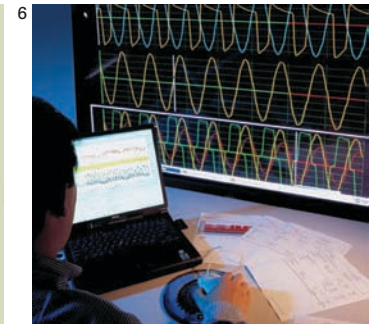
### Eaton solutions

	Sustainable Sites (SS)	Energy and Atmosphere (EA)	Materials & Resources (MR)	Indoor Environment Quality (EQ)	Innovation & Design Process (ID)
<b>Save Energy</b>					
1 Pow-R-Command Lighting Controls	•	•		•	•
2 Uninterruptible Power Systems (UPS)	•	•			•
3 Variable Frequency Drives	•	•		•	
4 ENERGY STAR® and Harmonic Mitigating Transformers		•			
5 Power Xpert® Software and Meters		•			•
6 Energy Audits		•			
7 Power Factor Correction Capacitors and Filters		•			
8 Paralleling Switchgear		•			•
9 Automatic Transfer Switches		•			
<b>Protect the Environment</b>					
10 Integrated Facilities Systems (IFS)	•				
11 Medium Voltage Switchgear				•	
12 Refurbishing Services			•		
13 Circuit Breakers	•	•			
14 Integrated Power Assemblies	•	•			
15 Busway		•			
<b>Maximum Credits</b>	<b>2</b>	<b>15 + prerequisites</b>	<b>1</b>	<b>4 + prerequisites</b>	<b>5</b>



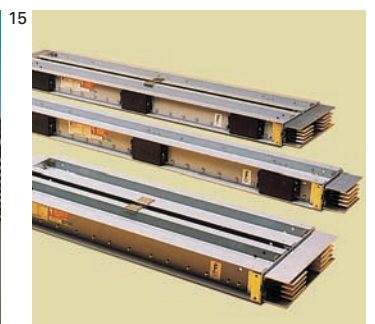
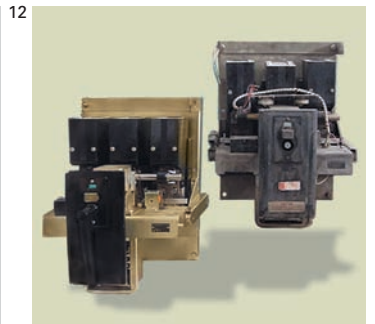
## Save energy

- 1 Pow-R-Command Lighting Controls
- 2 Uninterruptible Power Systems (UPS)
- 3 Variable Frequency Drives
- 4 ENERGY STAR® and Harmonic Mitigating Transformers
- 5 Power Xpert® Software and Meters
- 6 Energy Audits
- 7 Power Factor Correction Capacitors and Filters
- 8 Paralleling Switchgear
- 9 Automatic Transfer Switch



## Protect the environment

- 10 Integrated Facilities Systems (IFS)
- 11 Medium Voltage Switchgear
- 12 Refurbishing Services
- 13 Circuit Breakers
- 14 Integrated Power Assemblies (IPA)
- 15 Busway





## Sustainable Sites (SS)

### SS Credit 5.2:

#### Site Development: Maximize Open Space

1 Point

**Intent:** Provide a high ratio of open space to development footprint to promote biodiversity.

#### Requirements:\*

Reduce the development footprint (defined as the total area of the building footprint, hardscape, access roads and parking) and/or provide vegetated open space within the project boundary to exceed the local zoning's open space requirement for the site by 25%.

#### Related Eaton Solutions:

##### ● Integrated Facilities Systems™ (IFS)

The compact design of the IFS reduces the space required for electrical distribution equipment by as much as 40%. A smaller electrical room layout can help lead to a smaller building footprint.

##### ● Uninterruptible Power Systems (UPS)

Eaton's new Powerware 9395 UPS has a small footprint, requiring 50% less floor space than traditional UPS system designs.

##### ○ Circuit Breakers

In a power distribution panel, circuit breakers ranging from 100 to 1200 Amps consume 40 – 50% of the space of comparable fusible devices.

##### ○ Variable Frequency Drives

The HVX9000 IntelliPass/IntelliDisconnect family has a footprint that is one-third the size of other typical bypass drive offerings reducing building space and packaging requirements. The design also significantly reduces the weight of the bypass drive by 70%, decreasing shipping loads.

##### ● Integrated Power Assemblies (IPA)

The IPA is a prefabricated metal enclosure containing Eaton power distribution and industrial control products. In addition to electrical switchgear, motor control centers and communication systems, IPAs contain other auxiliary equipment necessary to complete the project in the minimum footprint required. By reducing the space required for the electrical distribution equipment, owners can reduce the overall development footprint.

### SS Credit 8:

#### Light Pollution Reduction

1 Point

**Intent:** Minimize light trespass from the building and site, reduce sky-glow to increase night sky access, improve nighttime visibility through glare reduction, and reduce development impact on nocturnal environments.

#### Requirements:\*

##### FOR INTERIOR LIGHTING

All non-emergency interior lighting shall be automatically controlled to turn off during non-business hours. Provide manual override capability for after hours use.

##### FOR EXTERIOR LIGHTING

Only light areas as required for safety and comfort. Do not exceed 80% of the lighting power densities for exterior areas and 50% for building facades and landscape features as defined in ASHRAE/IESNA Standard 90.1-2004, Exterior Lighting Section, without amendments.

#### Related Eaton Solutions:

##### ● Pow-R-Command Lighting Controls

Apply lighting control to reduce interior and exterior lighting levels that adjust with available daylighting.

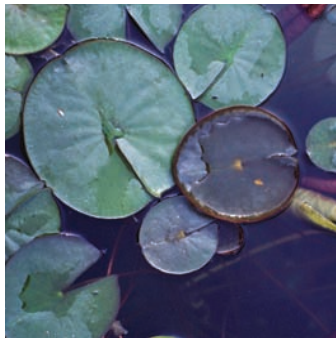
Fluorescent dimming for daylight harvesting. Provides ability to automatically maintain preset fluorescent levels. Utilizes a light sensor input to monitor and control the lighting levels. Also provides:

- Event scheduling
- Time scheduling and load override
- Calculates run-time for lamps and ballasts, tracks ON or OFF cycles

Impact on LEED credit qualification:

● Greenest ● Greener ○ Green

\*Note: Requirements under LEED-NC in the following pages have been abridged for brevity.



## Energy and Atmosphere (EA)

### EA Prerequisite 1:

#### Fundamental Commissioning of the Building Energy Systems

##### Required

**Intent:** Verify that the building's energy related systems are installed, calibrated and perform according to the owner's project requirements, basis of design, and construction documents.

##### Requirements:\*

The following commissioning process activities shall be completed by the commissioning team, in accordance with the LEED for New Construction 2.2 Reference Guide.

- Verify the installation and performance of the systems to be commissioned.
- Complete a summary commissioning report.
- Commissioning process activities shall be completed for the following energy-related systems, at a minimum:
- Heating, ventilating, air conditioning, and refrigeration (HVAC&R) systems (mechanical and passive) and associated controls
- Lighting and daylighting controls
- Domestic hot water systems
- Renewable energy systems (wind, solar etc.)

##### Related Eaton Solutions:

- *Pow-R-Command Lighting Controls*

Programming of the lighting controls and any daylighting control aspects of the lighting system must be commissioned for optimal performance. Eaton provides a wide variety of services from initial design consultation to start-up, commissioning and on-going monitoring.

- *Variable Frequency Drives*

Used as a commissioning tool, software associated with Eaton's Variable Frequency Drives can verify installation and performance characteristics of the building's HVAC systems especially when used in conjunction with Power Xpert metering and software.

- *Integrated Power Assemblies (IPA)*

An IPA from Eaton is a prefabricated building containing all major electrical equipment. It is fully wired for ease of inspection, startup and commissioning. The complete factory installation & wiring of these systems result in less troubleshooting at the jobsite. Factory wiring goes through a standard quality control procedure improving commissioning results at the jobsite.

### EA Prerequisite 2:

#### Minimum Energy Performance Required

**Intent:** Establish the minimum level of energy efficiency for the proposed building and systems.

##### Requirements:\*

**Design the building project to comply with both—**

- the mandatory provisions (Sections 5.4, 6.4, 7.4, 8.4, 9.4 and 10.4) of ASHRAE/IESNA Standard 90.1-2004 (without amendments); and
- the prescriptive requirements (Sections 5.5, 6.5, 7.5 and 9.5) or performance requirements (Section 11) of ASHRAE/IESNA Standard 90.1-2004 (without amendments).

##### Related Eaton Solutions:

- *Pow-R-Command Lighting Controls*

Incorporating use of creative controls such as occupancy sensors, timers and daylight harvesting systems will assist in reducing building energy consumption.

- *Uninterruptible Power Systems (UPS)*

High efficiency of 95 percent reduces total energy losses by more than 50% when compared to traditional UPSs.

- *Variable Frequency Drives*

Incorporating use of variable frequency drives on HVAC system components such as fans and pump motors provides for significantly improved

efficiency, energy savings and optimization. The energy savings can be dramatic. For example, the speed of a centrifugal fan reduced by only 1/3 will save over 70% in energy consumption.

- *Power Factor Correction Capacitors and Filters*

Power factor correction saves energy and can also reduce the required sizes of electrical equipment due to lower kVA. Power factor correction enables your organization to become more environmentally responsible without reducing the amount of working power available. This corresponds to additional savings in material costs that would have been used to produce larger electrical equipment and distribution systems.

As part of a power factor correction system, harmonic filters resolve the power anomalies caused by harmonics that shorten equipment life and trigger unexpected shutdowns. By controlling harmonics, current levels in the system are reduced, and heat is removed from the system. This, in turn, minimizes troublesome issues such as blown fuses, damaged motors, and failed transformers extending equipment life.

- *Busway*

Busway sized to carry the same current as cable will have lower losses, improve energy performance and it can also be reconfigured easily as needs change.

Impact on LEED credit qualification:

● Greenest ● Greener ○ Green





## EA Credit 1: Optimize Energy Performance 1–10 Points

**Intent:** Achieve increasing levels of energy performance above the baseline in the prerequisite standard to reduce environmental and economic impacts associated with excessive energy use.

**Requirements:\***

Select one of the three compliance path options. Project teams documenting achievement using any of the three options are assumed to be in compliance with EA Prerequisite 2.

**NOTE:** LEED for New Construction projects registered after June 26th, 2007 are required to achieve at least two (2) points under EAc1.

### OPTION 1 — WHOLE BUILDING ENERGY SIMULATION (1–10 Points)

Demonstrate a percentage improvement in the proposed building performance rating compared to the baseline building performance rating per ASHRAE/IESNA Standard 90.1-2004 (without amendments) by a whole building project simulation using the Building Performance Rating Method in Appendix G of the Standard.

#### Related Eaton Solutions:

##### ● *Pow-R-Command Lighting Controls*

Using task and ambient lighting control strategies will enable building occupants to adjust lighting levels to meet their task needs as well as personal preferences and reduce lighting energy consumption by 10 to 30 percent.

##### ● *Uninterruptible Power Systems (UPS)*

Eaton BladeUPS® go even further with a rating upwards of 97% efficiency, further minimizing energy usage.

##### ● *ENERGY STAR® and Harmonic Mitigating Transformers*

Use of harmonic mitigating transformers (HMTs) smooth out the energy-use curve. The increasing amount of electronic equipment in facilities increases the amount of nonlinear loads, reducing the efficiency of electronic equipment and creating overload conditions. HMTs correct this situation.

The results are 30% less power loss when compared to standard delta-wye designed transformers.

##### ○ *Circuit Breakers*

Circuit breakers waste 10 to 30% less energy for equivalent loading levels when compared to fuses. Less wasted energy means less generated power and therefore less greenhouse gas production. ([http://pps2.com/b1/watts\\_calc.php](http://pps2.com/b1/watts_calc.php)) for energy and greenhouse gas reduction.)

## EA Credit 2: On-Site Renewable Energy 1–3 Points

**Intent:** Encourage and recognize increasing levels of on-site renewable energy self-supply in order to reduce environmental and economic impacts associated with fossil fuel energy use.

**Requirements:\***

Use on-site renewable energy systems to offset building energy cost. Calculate project performance by expressing the energy produced by the renewable systems as a percentage of the building annual energy cost to determine the number of points achieved.

Use the building annual energy cost calculated in EA Credit 1 or use the Department of Energy (DOE) Commercial Buildings Energy Consumption Survey (CBECS) database to determine the estimated electricity use.

#### Related Eaton Solutions:

##### ● *Power Xpert® Software and Meters*

Recognizing that the use of on-site renewable energy will require a means to measure the percentage of building energy requirements, Power Xpert meters and software can meter and provide the backbone of load control, measurement and monitoring for on-site power sources. When applying renewable energy, every effort should be made to take advantage of net metering with the local utility.

##### ● *Paralleling Switchgear*

When applying renewable on-site generation, Eaton paralleling switchgear can provide a smooth transition. Eaton's solutions combine the proven power circuit breaker switchgear and circuit breakers with advanced, industry-leading, microprocessor based engine generator set control for any distributed generation application.

When applying renewable energy, every effort should be made to take advantage of net metering with the local utility (See Power Xpert).

##### ● *Automatic Transfer Switches*

A transfer switch is a critical component of any on-site power system. When the normal source of power is lost, a transfer switch quickly and safely shifts the load circuit from the normal source of power to the alternate source of power. This permits critical loads to continue running with minimal or no outage. After the normal source of power has been restored, the re-transfer process returns the load circuit to the normal power source. Such a process, when combined with paralleling switchgear allows for a seamless connection of on-site renewable energy sources that may operate somewhat intermittently and require such control and transfer capability.

Impact on LEED credit qualification:

● Greenest ○ Greener ○ Green



### EA Credit 3: Enhanced Commissioning 1 Point

**Intent:** Begin the commissioning process early during the design process and execute additional activities after systems performance verification is completed.

#### Requirements:\*

Implement, or have a contract in place to implement additional commissioning process activities in addition to the requirements of EA Prerequisite 1 and in accordance with the LEED for New Construction 2.2 Reference Guide.

#### Related Eaton Solutions:

- *Pow-R-Command Lighting Controls*
- *Power Xpert® Software and Meters*
- *Energy Audits*

Eaton's team of professionals can work with the commissioning agent during the design phase to incorporate strategies for optimizing building performance, including factory-direct product manuals, training coursework and using third party systems as well as toolsets on the many Eaton products such as the PowerXpert meter and Pow-R-Command lighting controls.

Eaton offers training coursework throughout the year in Energy Management project implementation for customers to implement their own energy management program. Coursework is offered through the Eaton University system.

Impact on **LEED** credit qualification:

● Greenest ● Greener ○ Green

### EA Credit 5: Measurement & Verification 1 Point

**Intent:** Provide for the ongoing accountability of building energy consumption over time.

#### Requirements:\*

Develop and implement a Measurement & Verification (M&V) Plan consistent with Option D: Calibrated Simulation (Savings Estimation Method 2), or Option B: Energy Conservation Measure Isolation, as specified in the International Performance Measurement & Verification Protocol (IPMVP) Volume III: Concepts and Options for Determining Energy Savings in New Construction, April, 2003.

- The M&V period shall cover a period of no less than one year of post-construction occupancy.

#### Related Eaton Solutions:

- *Pow-R-Command Lighting Controls*

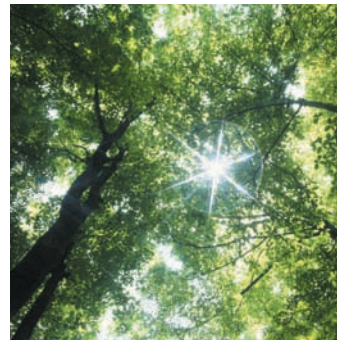
Pow-R-Command lighting control panels provide of seamless integration of lighting and power metering functions and provide for ongoing accountability for building energy performance.

- *Power Xpert® Software and Meters*

Track building energy performance with Power Xpert meters and software by comparing predicted performance to actual performance, broken down by component or system. Supports the International Performance Measurement & Verification Protocol (IPMVP) Volume III: Concepts and Options for Determining Energy Savings in New Construction, April, 2003. Measurement and verification strategies using Power Xpert architecture can be used in conjunction with monitoring and trend logging of significant energy systems for ongoing accountability of building energy performance.

- *Variable Frequency Drives*

With Eaton's VFDs, track performance of HVAC systems (kwh), comparing predicted performance to actual performance, in conjunction with trend logging for ongoing accountability of building energy performance.



## Materials & Resources (MR)

### MR Credit 2.1:

#### Construction Waste Management: Divert 50% from Disposal

1 Point

**Intent:** Divert construction, demolition and land-clearing debris from disposal in landfills and incinerators. Redirect recyclable recovered resources back to the manufacturing process. Redirect reusable materials to appropriate sites.

#### Requirements:

Recycle and/or salvage at least 50% of non-hazardous construction and demolition debris. Develop and implement a construction waste management plan that, at a minimum, identifies the materials to be diverted from disposal and whether the materials will be sorted on-site or co-mingled. Excavated soil and land-clearing debris do not contribute to this credit. Calculations can be done by weight or volume, but must be consistent throughout.

#### ● Refurbishing services

By taking steps to reduce, recycle, and reuse building materials, businesses can reduce their impact on the environment, as well as decrease the costs of building new structures and refitting existing structures.

During major renovation work, Eaton Electrical Services & Systems can refurbish existing equipment or recycle equipment for replacement parts on other vintage electrical equipment. Over the past seven (7) years, Eaton has preserved more than 200,000 lbs. of copper and steel by refurbishing electrical equipment for reuse in the marketplace.

## Indoor Environmental Quality (EQ)

### EQ Prerequisite 1:

#### Minimum IAQ Performance Required

**Intent:** Establish minimum indoor air quality (IAQ) performance to enhance indoor air quality in buildings, thus contributing to the comfort and well-being of the occupants.

#### Requirements:

Meet the minimum requirements of Sections 4 through 7 of ASHRAE 62.1-2004, Ventilation for Acceptable Indoor Air Quality. Mechanical ventilation systems shall be designed using the Ventilation Rate Procedure or the applicable local code, whichever is more stringent.

Naturally ventilated buildings shall comply with ASHRAE 62.1-2004, paragraph 5.1.

#### Related Eaton Solutions:

● *Variable Frequency Drives*  
Improved occupant health and productivity are a result of optimal IAQ. Eaton's variable frequency drives provide the motor control to balance the impacts of ventilation rates on energy use and IAQ to optimize for energy efficiency and occupant health.

### EQ Credit 5:

#### Indoor Chemical & Pollutant Source Control

1 Point

**Intent:** Minimize exposure of building occupants to potentially hazardous particulates and chemical pollutants.

#### Requirements:

Where hazardous gases or chemicals may be present or used (including garages, housekeeping/laundry areas and copying/printing rooms), exhaust each space sufficiently to create negative pressure with respect to adjacent spaces with the doors to the room closed.

#### Related Eaton Solutions:

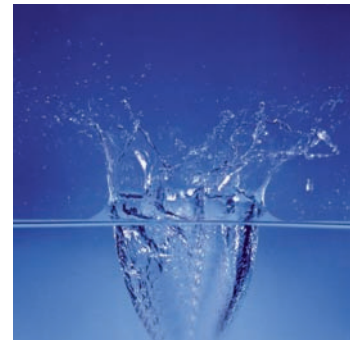
#### ○ Switchgear

Eaton does not utilize SF6 in any of its switchgear products because it is one of the greenhouse gases listed under the Kyoto Protocol with the highest global warming potential (GWP 23,000).

Impact on LEED credit qualification:

● Greenest ○ Greener ○ Green





### EQ Credit 6.1:

#### Controllability of Systems: Lighting

1 Point

**Intent:** Provide a high level of lighting system control by individual occupants or by specific groups in multi-occupant spaces (i.e. classrooms or conference areas) to promote the productivity, comfort and well-being of building occupants.

#### Requirements:

Provide individual lighting controls for 90% (minimum) of the building occupants to enable adjustments to suit individual task needs and preferences.

#### AND

Provide lighting system controllability for all shared multi-occupant spaces to enable lighting adjustment that meets group needs and preferences.

#### Related Eaton Solutions:

##### ● *Pow-R-Command Lighting Controls*

Using task and ambient lighting control strategies will enable building occupants to adjust lighting levels to meet their task needs as well as personal preferences.

Fluorescent dimming for daylight harvesting. Provides ability to automatically maintain present fluorescent levels. Utilizes a light sensor input to monitor and control the lighting levels. Also provides:

- Event scheduling or One-Shot
- Time scheduling and load override
- Calculates run-time for lamps and ballasts, tracks ON or OFF cycles

### EQ Credit 7.1:

#### Thermal Comfort: Design

1 Point

**Intent:** Provide a comfortable thermal environment that supports the productivity and well-being of building occupants.

#### Requirements:

Design HVAC systems and the building envelope to meet the requirements of ASHRAE Standard 55-2004, Thermal Comfort Conditions for Human Occupancy. Demonstrate design compliance in accordance with the Section 6.1.1 Documentation.

#### Related Eaton Solutions:

##### ● *Variable Frequency Drives*

As part of a well-designed HVAC system, Eaton's variable frequency drives provide the capability to control air speed and thus temperature control to meet varying occupant needs.

### EQ Credit 8.1:

#### Daylight & Views: Daylight 75% of Spaces

1 Point

**Intent:** Provide for the building occupants a connection between indoor spaces and the outdoors through the introduction of daylight and views into the regularly occupied areas of the building.

#### Requirements:\*

Demonstrate, through records of indoor light measurements, that a minimum daylight illumination level of 25 footcandles has been achieved in at least 75% of all regularly occupied areas. Measurements must be taken on a 10-foot grid for all occupied spaces and must be recorded on building floor plans.

#### Related Eaton Solutions:

##### ● *Pow-R-Command Lighting Controls*

Allow the lighting control system to make the connection between indoor spaces and the outdoors by controlling lighting levels with daylight harvesting and occupancy controls.

Impact on **LEED** credit qualification:

● Greenest ● Greener ○ Green



## Innovation & Design Process (ID)

### ID Credit 1–1.4:

#### Innovation in Design 1–4 Points

**Intent:** To provide design teams and projects the opportunity to be awarded points for exceptional performance above the requirements set by the LEED-NC Green Building Rating System and/or innovative performance in Green Building categories not specifically addressed by the LEED-NC Green building Rating System.

#### Requirements

- **Credit 1.1 (1 point)** In writing, identify the intent of the proposed innovation credit, the proposed requirement for compliance, the proposed submittals to demonstrate compliance, and the design approach (strategies) that might be used to meet the requirements.
- **Credit 1.2 (1 point)** Same as Credit 1.1
- **Credit 1.3 (1 point)** Same as Credit 1.1
- **Credit 1.4 (1 point)** Same as Credit 1.1

#### Related Eaton Solutions:

##### ● Pow-R-Command Lighting Controls

Wireless lighting control integration reduces control wiring installation and further controllability of general and task lighting.

Capabilities are available to provide control of window treatments, further enhancing the daylight harvesting potential for further energy.

Fluorescent lamps last longer when dimmed and/or turned off, by as much as 50%, reducing the frequency of lamp and ballast replacement and therefore reducing the raw materials needed for lighting.

##### ○ Uninterruptible Power Systems (UPS)

Advanced Battery Management® (ABM) extends battery life and optimizes battery recharge time via patented technology, features that extend battery life by up to 100% and minimize energy usage.

Optional temperature-compensated charging monitors battery temperature and extends battery life even further.

##### ● Power Xpert® Software and Meters

Power Xpert Architecture helps building operations beyond traditional power management systems. Power Xpert Architecture can open the door to communicating with the rest of your organization, because it is based on the Ethernet protocol that is the de facto standard for modern local area communications networks.

Once your power system is linked to an Ethernet network via the Power Xpert Architecture, you can connect to applications like the building management system, monitoring your HVAC equipment, or sharing information with your enterprise accounting system.

##### ● Paralleling Switchgear

Paralleling switchgear may allow for innovative use of waste heat for power production or integration of other renewable power sources that still require some grid-connected power. The paralleling switchgear is a critical component to a more comprehensive renewable energy strategy.

### ID Credit 2:

#### LEED Accredited Professional 1 Point

**Intent:** To support and encourage the design integration required by a LEED for New Construction green building project and to streamline the application and certification process.

#### Requirements:

**At least one principal participant of the project team shall be a LEED Accredited Professional (AP)**

#### Related Eaton Solutions:

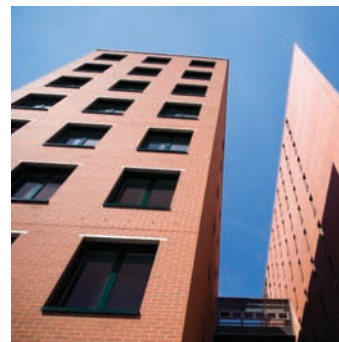
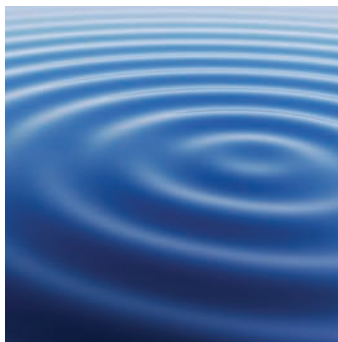
##### ● Energy Audits

Eaton employs LEED Accredited Professionals who can help you navigate the LEED certification system to apply the proper solutions for maximum credits.

Impact on **LEED** credit qualification:

● Greenest ○ Greener ○ Green

**\*Note:** Requirements under LEED-NC in the following pages have been abridged for brevity.



## Sustainability

Many of Eaton's products described in this guide provide sustainable benefits not covered by the LEED Green Building Rating System such as extending equipment life, consuming less materials or using more environmentally friendly insulating gases.

### Related Eaton Solutions:

*Integrated Facilities Systems™ (IFS)*

*Integrated Power Assemblies (IPA)*

Many projects will have various pieces of distribution equipment all headed to the same general area of the electrical room. Traditional panelboard construction consists of three pieces: a back box, interior chassis, and trim. Multiplied by the number of panels in the electrical room, and added to the distribution switchboards and transformers, the materials add up. The IFS and IPA come pre-configured, reducing the number of pieces, in many cases, to just one or two, nearly eliminating construction waste and landfill disposal compared to traditional construction. Even the packaging waste is significantly reduced.

### Circuit breakers

Eaton's circuit breakers can be reset and reused over and over again, essentially recycled when compared to a standard fuse that must be replaced and discarded in compliance with special disposal procedures.

*Pow-R-Command Lighting Controls*

*Integrated Facilities Systems™ (IFS)*

*Integrated Power Assemblies (IPA)*

Eaton has sixteen (16) regional manufacturing sites for standard or custom assembled panelboards, switchboards and enclosed circuit breakers as well as Pow-R-Command, Integrated Facilities Systems, and Integrated Power Assemblies within a 500-mile radius of nearly every US project.

### Circuit Breakers

Eaton produces 600A and larger molded case circuit breakers in Beaver, PA – within 500 miles of nearly 50% of the US population.

### Variable Frequency Drives

Eaton produces its enclosed drives models HVX9000 in Watertown, WI – within 500 miles of much of the Midwest US population.

### Eaton Products:

**A powder coat painting system is used to paint Eaton electrical equipment, eliminating Volatile Organic Compounds (VOCs) that would be released from conventional solvent based paints.**

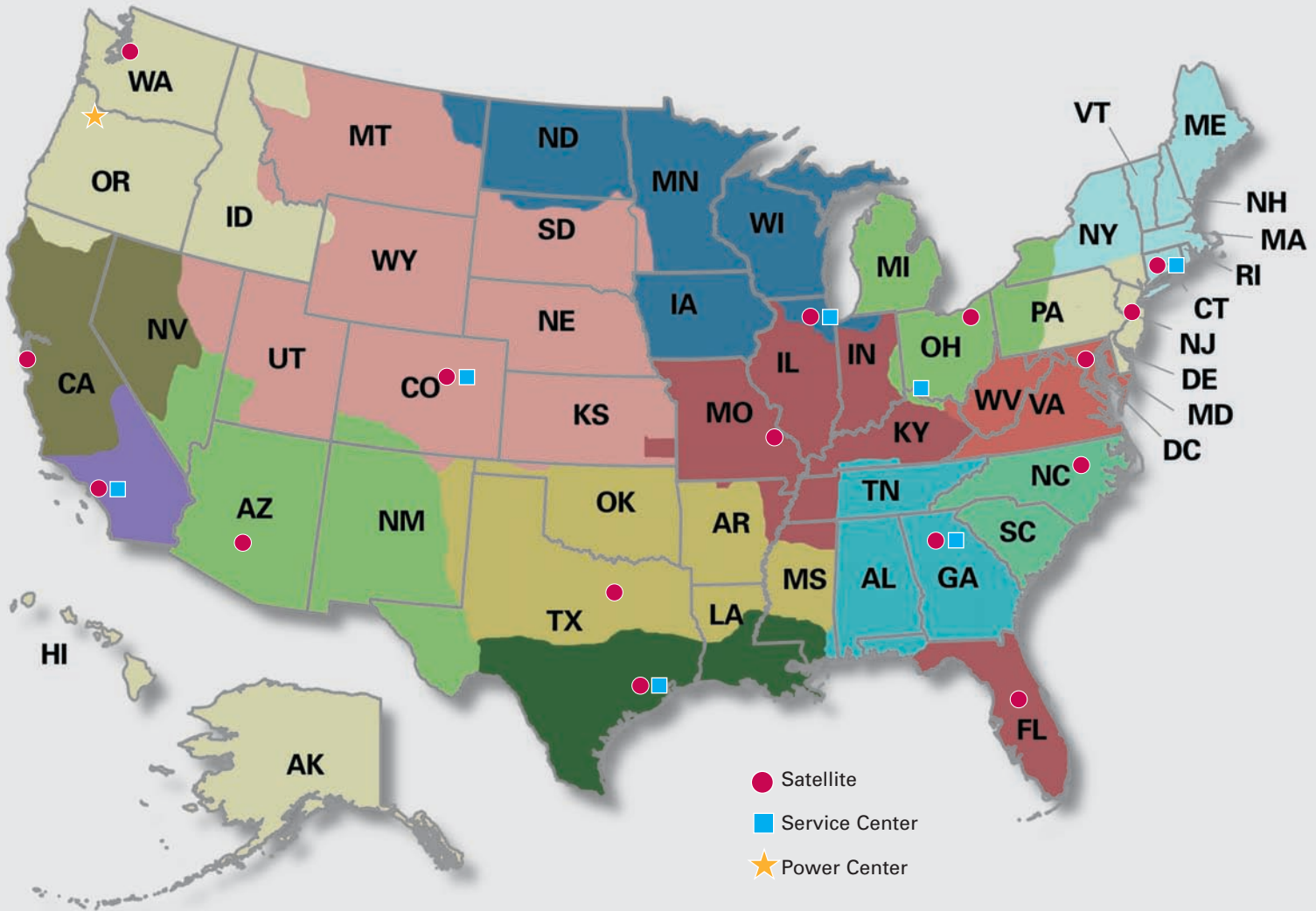
*Power Factor Correction Capacitors and Filters*

Power Factor Correction may allow for innovative use of normally wasted energy by maximizing usable energy that is distributed within the building. PFC also reduces waste by extending the life of electrical products such as motors, elevators and HVAC by providing improved power quality to these devices.

### Busway

Busway uses less copper and steel than cable and conduit and wastes less material because it is built to exact length.





### Regional Manufacturing Facilities

Located at strategic locations throughout the United States, these regional manufacturing facilities manufacture and deliver standard or custom Cutler-Hammer branded assembled panelboards, switchboards, enclosed circuit breakers, motor control Centers, enclosed control, LV and MV switchgear and MV control...when and where needed. And with that kind of proximity to the project site, transportation costs and associated fuel are reduced significantly. Eaton is the only electrical manufacturer that uses smaller satellite manufacturing facilities across the country to cater to individual needs using as much regional resources as possible.

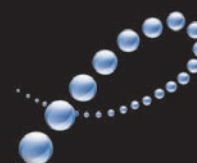
Atlanta, GA	● ■	Los Angeles, CA	● ■
Baltimore, MD	●	Orlando, FL	●
Chicago, IL	● ■	Phoenix, AZ	●
Cincinnati, OH	■	Portland, OR	★
Cleveland, OH	●	Raleigh, NC	●
Dallas, TX	●	San Francisco, CA	●
Denver, CO	● ■	Seattle, WA	●
Hartford, CT	● ■	St. Louis, MO	●
Houston, TX	● ■	Westampton, NJ	●

Visit [www.eaton.com/regionalmfg](http://www.eaton.com/regionalmfg) for address and phone numbers.

Eaton Corporation is a diversified industrial manufacturer ranked among the largest Fortune 500 companies. The electrical group is Eaton's largest division and is a global leader in electrical control, power distribution, power quality, automation, and monitoring products and services. Eaton's electrical products include brands such as Cutler-Hammer®, Powerware®, Holec®, MEM® and others. Eaton provides PowerChain™ Management solutions to serve the needs of the industrial, institutional, IT, data center, mission critical, utility, residential and OEM markets worldwide.

PowerChain Management solutions help enterprises achieve a competitive advantage through proactive management of the power system as a strategic, integrated asset throughout its life cycle. With Eaton's distribution, generation and power quality equipment; full-scale engineering services; and information management systems, the power system is positioned to deliver powerful results: greater reliability, operating cost efficiencies, effective use of capital, enhanced safety, and risk mitigation.

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